

Documentation for Trek 2.1

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Abstract: The following is documentation for Trek version 2.1 developed by Eugene Ball of the University of Rochester. Trek uses a number of Altos on a single Ethernet to provide the environment for a distributed multi-player game. Each player is in charge of a single ship which he controls from his Alto.

This document is meant to be a primer in the basic rules and user interface of Trek as well as a comprehensive reference guide for the more experienced player. It is not meant to teach strategies for play or to detail possible implementations for multi-processor environments.

Key words and phrases: klingon, romulan, terran, star base, constructor base, stellar system, star gate, manual jump, automatic jump, long scan, short scan, galaxy scan, remote scan, shields, torpedos, phasers, cloaking, damage report

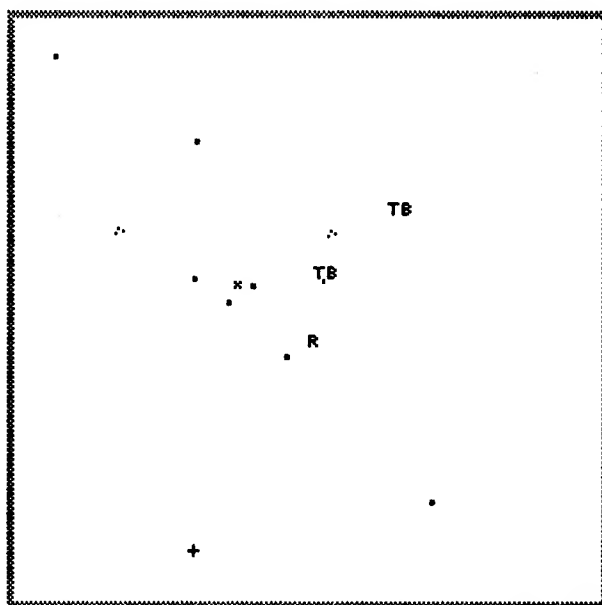
Introduction

This is documentation for Trek version 2.1. It is playable on any Alto. Trek is a multiplayer game where each player has control of one ship and uses a separate Alto. The player has the choice of being either a Klingon, Romulan, or Terran. It can be played solo but there will be no enemy to destroy. Whenever you run trek on your Alto, you will be placed in the same galaxy as everyone else running trek (Exception: see Starting). The object of the game is two-fold: to destroy the enemy and his bases without being destroyed, and to become the 'Master of the Universe' (see Fate).

The Display

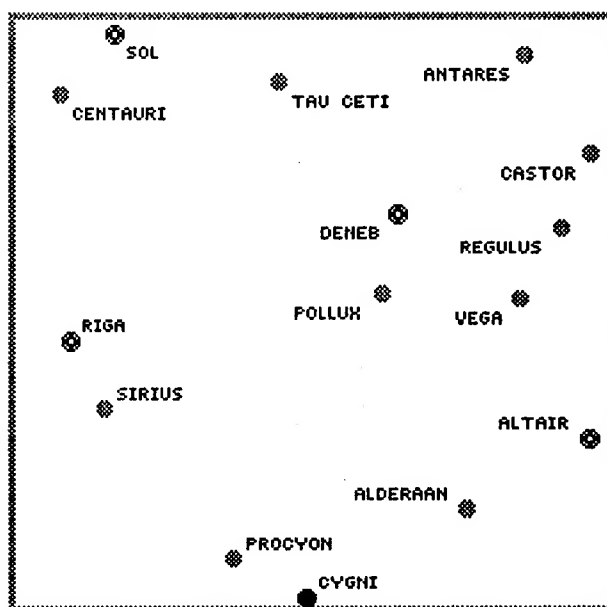
The display in Trek is divided into seven separate areas. They are the long range & galaxy scan, short range scan, direction and acceleration controls, the velocity and energy indicators, the damage report area, the supplies and fire control indicators, and the communication area (see Appendix II). Each area will be dealt with individually.

Long Range Scan



The long range scan area is used for seeing what is in the stellar system with you. You will not be able to see all of the system in one scan area, but as you move it will be automatically updated. This area is used to guide your ship around obstacles and to the enemy. If you hit any mouse button in this area, the long range scan will be replaced by the Galaxy scan.

Galaxy Scan



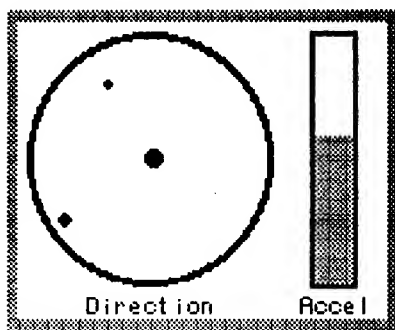
The Galaxy scan gives you a view of the entire playing area. Each stellar system is shown as a gray circle. The stellar system you are presently in is shown as a white circle. Any stellar system containing one of your star bases is shown as a gray circle with a white cross. While viewing the Galaxy scan, hitting the right mouse button returns you to the Long range scan. (For other commands see Bases.)

Short Range Scan

The short range scan is used for showing the area immediate surrounding your ship. It is the largest part of the display and where most of the action will be taking place. It shows your ship in the center of the screen and everything will appear to move past you. It enlarges the stars and displays your bases so you may avoid or dock with them as necessary.

To put shields up, move the cursor to the area surrounding your ship in the short range scan. The cursor will change to a bar and by depressing the left mouse button one level of shields will be put up. There are four levels of shields and each bug of the mouse button will put up another level of shields. *NOTE: Holding the mouse button down will raise them to their maximum.* When the screens have gone to white that means that they are at maximum level. To bring the screens down, use the right mouse button. There are four quadrants of screens, front, rear, and one on each side. The more shields you have up, the more energy you will use.

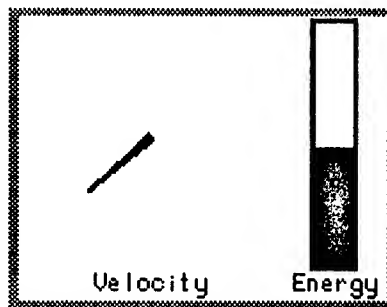
Direction and Acceleration Controls



The area inside the circle is used for controlling the direction your ship and phasers are pointing. The outside large dot is your ship's direction and the inner small dot is the direction your phasers will shoot. The ship will only appear to be angled in increments of 45 degrees in the short range scan, but the precise direction of the ship is given by the outer dot. The ship's direction is changed by moving the cursor into the outer part of the circle and clicking the mouse. A star will appear where you click and the large dot will move to that location. If you move the cursor closer to the center, it will look like an open circle. Clicking the mouse now will change the direction of the phasers.

To accelerate, move the mouse inside the acceleration bar and hit any button. The part of the acceleration bar below the mouse will turn gray. The larger the gray area, the larger your acceleration will be. **CAUTION:** *The acceleration stays on until you turn it off. To turn acceleration off, click the acceleration bar at the bottom.* **NOTE:** *Inertia is in effect. To change direction of movement you must change the direction of your ship and then accelerate. The only way to slow down is to apply acceleration opposite the direction you are presently travelling.* **NOTE:** *If you use the right mouse button for acceleration, the acceleration will slowly decline.*

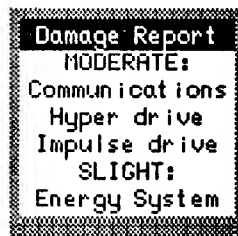
Velocity and Energy Indicators



The velocity indicator shows which direction your ship is headed and at what speed it is going. The larger the arrow the faster you are going. When the velocity indicator turns white with a black arrow, you are going at warp speed. When you reach warp speed your acceleration will start declining. **NOTE:** *By continually clicking the acceleration, it is possible to travel considerably faster than warp speed if you are not near a star gate. This is called streaking.*

The energy indicator tells you how much energy you have available. The more energy you use the lower the white area gets. If it disappears, your life support systems fail and you die. **NOTE:** *Due to a 'feature' in the program, if you die from energy starvation you will not 'rise to fight again'.* Energy regenerates at a fairly slow rate. Things that use energy are screens, acceleration, and phasers. **CAUTION:** *All ships use a large amount of energy when hyper jumping between stellar systems, whether they make it or not, so make sure you have lots of energy left or you will not make it very far.*

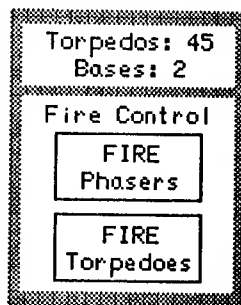
Damage Reports



When you are hit by an enemy phaser or torp, you will often be damaged. If you are

damaged, you will get a report in the upper right corner. It will tell you what's been damaged and whether it is severe, moderate, or slight (see Appendix VI). Each item damaged will slowly recover until it is completely repaired. *NOTE: Damage is immediately repaired if you dock with a base.*

Fire Control and Supplies



Under the damage reports you will find two pieces of information. One tells you how many torpedoes you have on board and the other tells you how many bases you have on board. These will start at the maximum for your type of ship and decrease as you use them. To replenish your supplies you must dock with a base (see Bases).

To fire torpedoes, move the cursor into the box that says *fire torpedoes* and depress any mouse button. The torpedo will fire in the direction that your ship is facing (see Direction). You may not fire again until the *loading torpedo* sign is replaced with *fire torpedoes*.

To fire phasers, move the cursor into the box labeled *fire phasers* and bug it. The phasers will fire in the direction the phaser indicator is pointing (see Direction). You may not fire your phasers again until the phasers you just fired have finished.

Bases

To deploy bases, hit the escape (ESC) key followed by the 'B' key. **CAUTION:** *If you are moving too quickly, you may ram the base as it is deployed.* In the communications area you will get the message "base deployed" or "base deployed and constructing new bases". This last message means that later, when you dock with this 'constructor base', you will be given more bases as well as torpedos. Bases that are dropped near asteroid clusters (3 dots in the long range scan) will be constructor bases. Presumably raw materials are needed to make new bases.

To dock, move slowly toward the base. **CAUTION:** *If you are moving too quickly, you will ram the base instead of docking.* The message "docked with base" will be displayed in the communications area. Once docked, all damage will be repaired and you will be resupplied with torpedoes (and bases if applicable). The longer the base has been waiting, the more it will have for you. You will never be supplied with more than your maximum.

While viewing the Galaxy scan and when the cursor is centered over a stellar system containing one of your star bases you can do the following:

-- *Left Mouse:* automatically jumps you to the remote base. **CAUTION:** *After you jump you will be moving directly toward the remote base. If you are moving too quickly you will crash into the base.* **NOTE:** *Unlike a standard jump, you will arrive with your screens down, regardless of how you had them before. There will be a 9 second delay before you enter hyper-space. You will be without shields during this delay.*

-- *Middle Mouse:* replaces the Galaxy scan with a long range scan around the remote base. Galaxy scan returns after ~15 sec. **NOTE:** *Your acceleration and short range scan will be turned off while you do a remote long scan. If you type "(ESC) D" during this scan, the remote base will self-destruct. If an enemy is near, the blast might destroy him.*

NOTE: *If you have a base in the system you are currently in, the above commands work locally as well as remotely.*

To destroy someone else's base, fire on it just like you would fire on a ship. Your aim has to be quite accurate or it will not die. **CAUTION:** *When destroying a base, keep a good distance and keep your shields up or when it blows up it might destroy you in the blast.* **NOTE:** *Due to a 'feature' in the program, some bases are unkillable. Bases which have been captured but not docked with (see*

Fate) seem especially unkillable. Don't waste your time on them.

Communications

This area is used for sending and receiving messages from other players. To send a message, just type it, finishing with a carriage return. This message will then be broadcast to *all* other players. When you receive a message from another player your communications area will flash white and the message will appear.

Be careful when you send messages. Your message will give *all* other players your location, the type of ship you are, and the first initial of the your name. This will sometimes prove to be fatal information. You may only send short messages since the system will not accept letters after about half the line is filled. To change the first letter your messages use, do a login or install on your disk before you start. *NOTE: If you install your disk with a multiple word name, the system will use the first letter of each name (maximum 3).* *EXAMPLE: If you install your disk with 'King of the Universe' and you are a romulan, a typical message might be 'from romulan Kot in sol:'.*

Ship Characteristics

Terrans are the norm on which all other ships are based. Their phasers are a close spread of three beams. The torpedoes have an adequate firing speed and can be spread nicely. With one full quadrant of shields up, the amount of energy used by the screens is almost equivalent to the amount regenerated. They may only jump with the star-gate in the short range scan screen making them the hardest to jump (see Navigation).

Romulans are a very slow turning, fast accelerating ship. They can jump even if the star-gate is not in the short range screen (providing it is close enough in the long scan) making their jumps very unpredictable unless you are careful to move slowly near star gates. Their phasers are wide spread three beam weapons and longer lasting. The Romulan torpedoes are circle shaped and are very powerful, but slow to reload. This makes spreading of the torpedoes hard. The Romulans have an option which none of the others have. This is the ability to cloak their ship from long range scanning. This is accomplished by hitting 'ESC' followed by 'C'. Cloaking is removed by the same command. *NOTE: Cloaking only hides you from the long range scans of enemy ships, you are still visible to long range scans from bases and short-range scans.* While cloaked the Romulan can't do any long range scans himself and if he is not careful could jump or collide with objects that he is not able to see. *NOTE: Due to a 'feature' in the program, if a cloaked romulan dies he will reappear uncloaked, but his long-range scan will still be blanked. He will not be able to cloak himself or get his long scan back until he deploys a base and docks with it.* The Romulan regenerates energy quicker, but it is still advisable to keep an eye on the energy level when full screens are up.

Klingons have a very fast turning ability, but weak acceleration. Their torpedoes are fast firing and can be spread well. They can be a deadly enemy. To limit some of this menace they can only carry a maximum of fifteen torpedoes. Their phaser is a long range single beam which draws quite a lot of energy when used. The Klingons will also jump even if the star-gate is not in the short range screen. They tend to have the most severe problems with energy.

See Appendix III for more detailed information on the different ships.

Fate

Eventually, you will probably find yourself in a 'duel to the death' with another player. When this happens, there are two probable outcomes:

-- He kills you. Your screen will flash a few times and a message will appear in your communications window like 'blasted by phasers'. The screen will fade, then reappear with the message '... but you rise to fight again!'. *CAUTION: If you die in a dog-fight, you will reappear in the same stellar system you died in. Your enemy might still be there.*

-- You kill him. A gray patch will surround his ship in your short range scan and you will receive a message like 'Victory over the Romulan'. *CAUTION: He will reappear in the same stellar system*

you killed him in. Be prepared for another fight. If your opponent had any star bases, then you will get a message like '3 bases stranded and vulnerable'. These bases are your plunder. They now are under your control and you can jump to them and scan around them just like any of yours. As soon as you dock with them you will get the message 'boarded and captured enemy star base' and the base is yours. **CAUTION:** *Attempting to dock with a star base which is not yours will result in you being 'boarded and destroyed'.*

To 'win' the game, put a star base in every stellar system. When you win, your screen will flash and you will be given messages like 'MASTER OF THE UNIVERSE', 'LORD OF ALL CREATION', and other suitably ego-inflating things. Everyone else will have their screen flash and receive a message like 'YOU HAVE SUFFERED IGNOMINIOUS DEFEAT AT THE HANDS OF THE ROMULAN'. **NOTE:** *Due to a 'feature' in the program, you will sometimes need to drop an extra base somewhere.*

Navigation

This seems to be the hardest skill for novices to pick up. Let's say you are in Sol and want to get to Tau Ceti. First, get near a star-gate (+ in long or short scan, also known as a 'jump-point'). Slow to a dead stop. Look at the relative positions of Sol and Tau Ceti in the galaxy scan. Tau Ceti is to the right and a little below Sol. Point your ship in that direction. Start accelerating. One of the following three things will happen:

-- The screen will flash and the galaxy scan will show that you have jumped to Tau Ceti. All is good.

-- The screen will flash and the galaxy scan will show you did not jump. Your aim was not good enough, try again.

-- The velocity vector will flash white, but there will be no attempt to jump. You were not close enough to a star-gate. If you are approaching the gate, wait. If you are heading away, turn around and try again.

All of this caution is not necessary, but it makes things easier. As you advance in skill, you will learn what you can get away with. I suggest that when you first try to jump, leave a base near the star gate. Then, if the jump fails, you can slow your speed down to zero and jump to the base rather than having to backtrack.

NOTE: *Not all jumps are easy, or even possible. You can jump from Cygni to Altair all day without ever reaching Alderaan, although jumps to Alderaan from Centauri or Pollux are fairly easy. Try a jump a few times. If it doesn't work, try some other route.*

Starting the Game

To start the game, type `trek`. The defaults are:

- gravity on
- terran
- random starting position
- 15 stellar system universe

The following switches can be used to change the defaults:

- `trek/g` - turns gravity off
- `trek/r` - romulan
- `trek/k` - klingon
- `trek/b` - start in sol (b for battle)
- `trek/n` - play in an n stellar system universe

NOTE: *when you pick a universe with n stellar systems, you only play with other people with the same number of stellar systems. This can be useful if you want to be alone to learn the controls without someone blasting you.*

These commands can be cascaded, but the following order should be followed: `g n (r/k) b`. Thus, `trek/grb` starts you as a romulan in sol with no gravity and `trek/nk` starts you out in a random stellar system in an n star-system universe as a klingon. `Trek/g5r` is suggested for beginners.

NOTE: *To quit the game, type "(ESC) Q".*

Trek Performance

Trek generally performs well for small games, but with larger games (>4 people) it can become quite sluggish. There are some things that can be done to make it better:

- Move to a different star-system. You will leave the sluggishness behind.
- Do not drop large numbers of bases.
- Kill existing bases.
- Do not send messages.

NOTE: The rumor that the poor performance is due to the design of the EtherNet is not true. During the largest of trek games less than 1 packet per hundred is lost due to collisions. The problem is that in a large game the program spends all of its time receiving packets at interrupt level. Attempts have been made to fix this, but have met with limited success due to the unavailability of the source code.

CAUTION: Trek broadcasts packets to net numbers 347-365 (The number depends on the number of stellar systems in the game. A 15 stellar system game is net number 347. games with 1 to 14 stellar systems are net numbers 350 to 365.). These net numbers may not be empty on all nets. Altos assigned to one of these numbers will receive spurious packets (see Appendix V).

Trek Courtesy








Following are a few courtesies that have been commonly observed when playing trek.

When leaving the game, type 'bye', or something to that effect. It can be very frustrating to search for a hidden opponent, only to find that he has gone away.

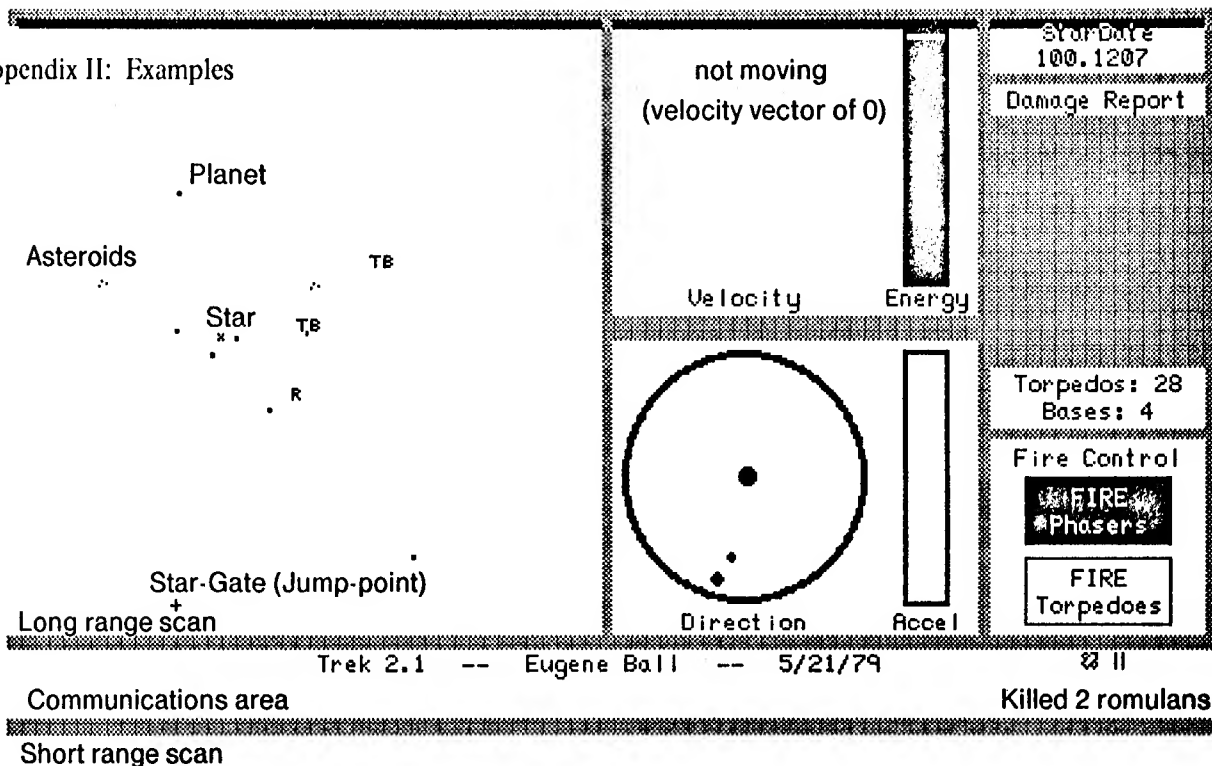
Do not leave large numbers of star bases in any given system. This deteriorates performance of the game considerably, often to the extent that the other players will single you out for destruction.

Happy Trekking
 Allen Wells
 Steve Quarterman
 Bob Baldwin

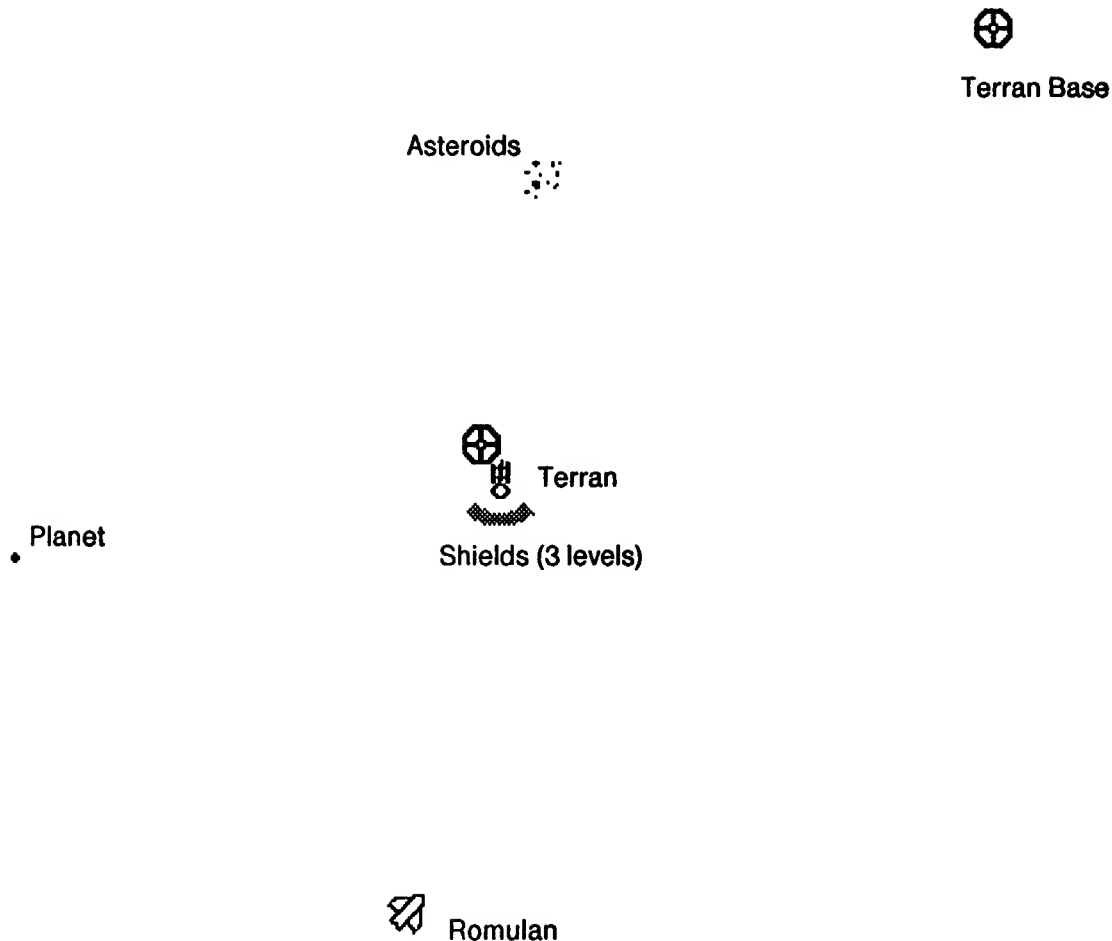
Appendix I: Symbols used in Trek

Short Range Scan	Long Range Scan
 Klingon Base	KB Klingon Base
 Klingon	K Klingon
 Romulan	R Romulan
 Romulan Base	RB Romulan Base
 Terran	T Terran
 Terran Base	TB Terran Base
 Star-Gate (Jump-Point)	+ Star-Gate (Jump-Point)
Stars have various shapes	* Star
Planets have various shapes Asteroids appear as rubble	Planets appear as dots Asteroids appear as 3 dots

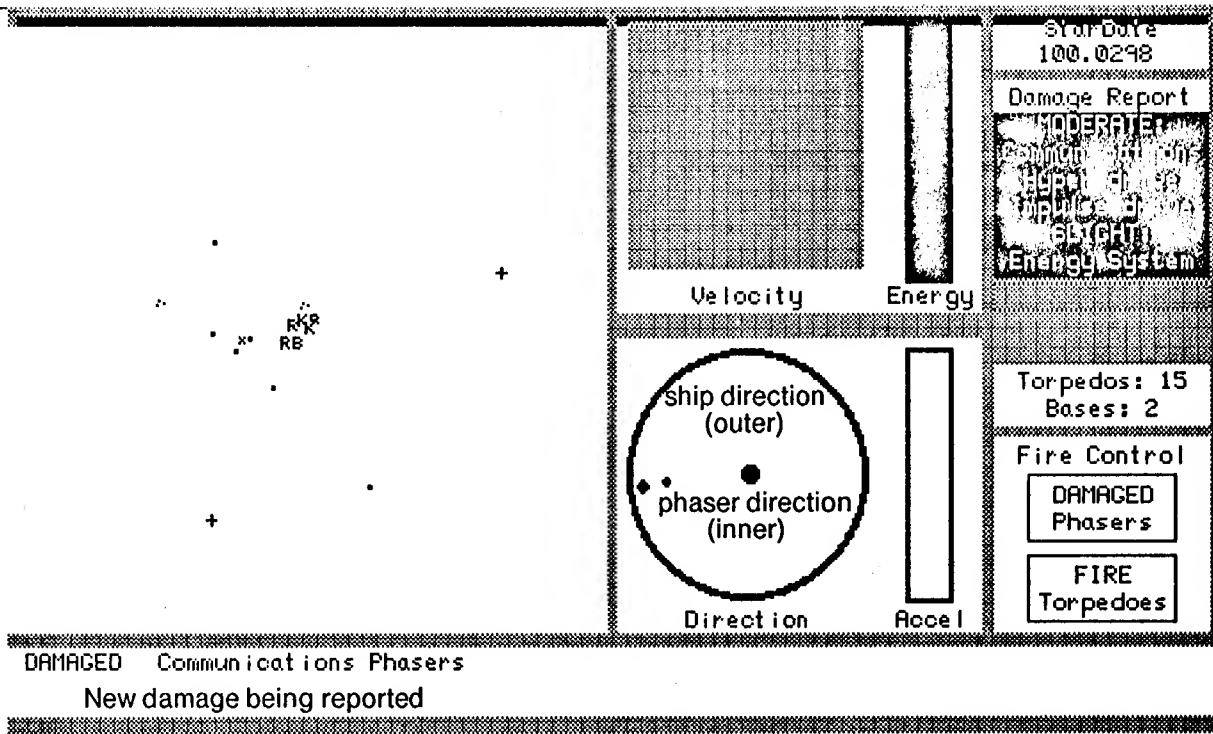
Appendix II: Examples



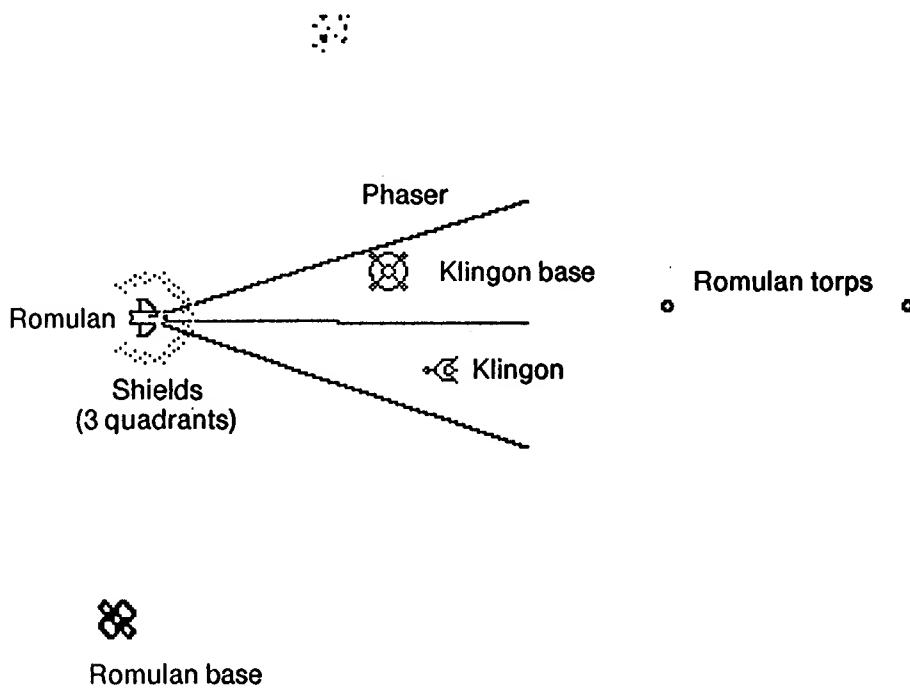
Player is the Terran in the center.



NOTE: This picture has been inverted to print on dovers.



Player is the Klingon in the center.



Appendix III: Trek Ship Characteristics

<u>Differences:</u>	<u>Terran</u>	<u>Klingon</u>	<u>Romulan</u>
Weapons			
Number of Torpedoes	32	15	45
Torpedo Strength	1	1	2
Torpedo Reload Time	4 sec	2 sec	8 sec
Torpedo Speed	1.5	1.5	1
Phaser Duration	5 sec	1 sec	10 sec
Phaser Length	1.3	1.6	1
Phaser Spread	med	none	wide
Engines			
Time to turn 360 degrees	18 sec	9 sec	36 sec
Time to accelerate to light speed	30 sec	30 sec	15 sec
Energy for Full Accelration	.375	.215	.375
Star-gate range	1	1.2	2
Scanners			
Length of long range scan	1	1.5	1
Length of short range scan	1.5	1	1
Shields			
Holding time of one full shield	512 sec	512 sec	Forever
Holding time of two full shields	85 sec	85 sec	128 sec
Miscellaneous			
Number of bases	4	3	6
Cloaking	no	no	yes
Energy Recharge Rate	1	1	1.5
Ship Strength	1.2	1	1.4

Similarities:**Shields**

The energy consumption of shields is the same for all ships, and is given by the following table:

Shield level:	1/4	2/4	3/4	4/4
Energy drain:	.125	.5	.875	1.25

Energy

The ships energy system can be modeled by a water tank. The reactor fills the tank at a rate which depends on the ship type (see Energy Recharge Rate) It is drained by the shields, the engines, and the phasors.

The tank capacity is the same for all ships and is 128 units. When a ship enters the games it starts with 103 units. One line of the energy bar graph equals 1.25 units.

Hyper-space

Jumps take the same amount of time and energy for all ships. The time varies with the distance, and does not depend on which star-gate is used to get there.

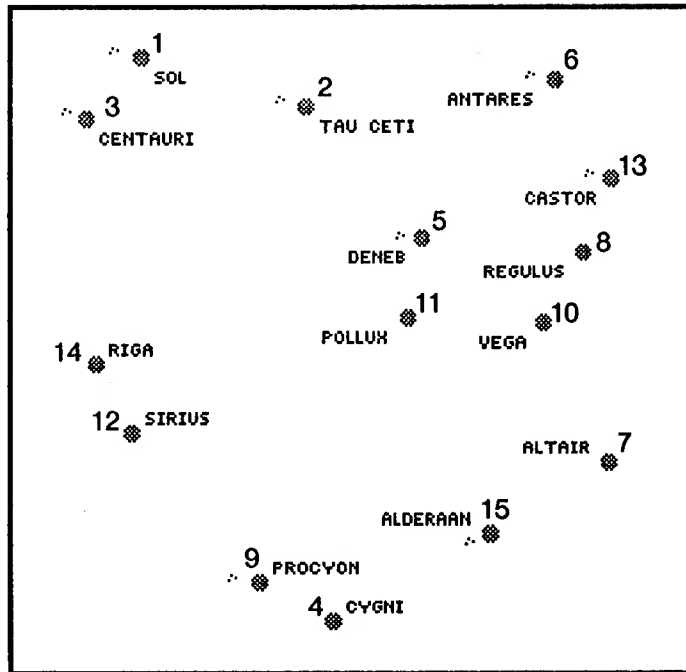
When doing an automatic jump to a base (either in the same or in a different star system), there is a nine (9) second delay before entering hyper-space.

Bases

For a base to start constructing other bases, it has to be a certain distance from a meteor cluster. This distance is the same for all ships, and is longer than most people think. It is approximately two-thirds the distance between the two meteor clusters in Sol.

Remote scans last 19 seconds for all types of ships.

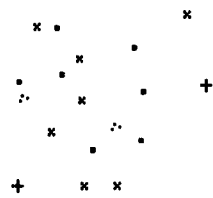
Appendix IV: Galactic Atlas



The  indicate that the stellar system contains asteroids.

The numbers tell the "order of entry". That is, trek/5 will give you a galaxy with stellar systems 1 through 5.

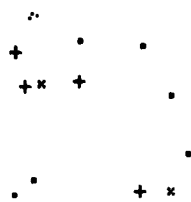
Alderaan



Altair



Antares



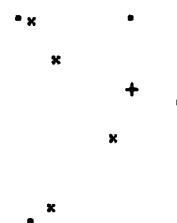
Castor



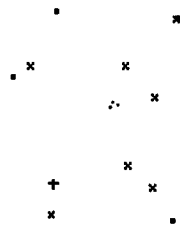
Centauri



Cygni



Deneb



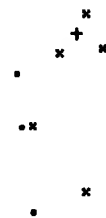
Pollux



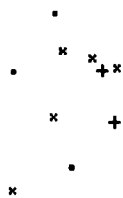
Procyon



Regulus

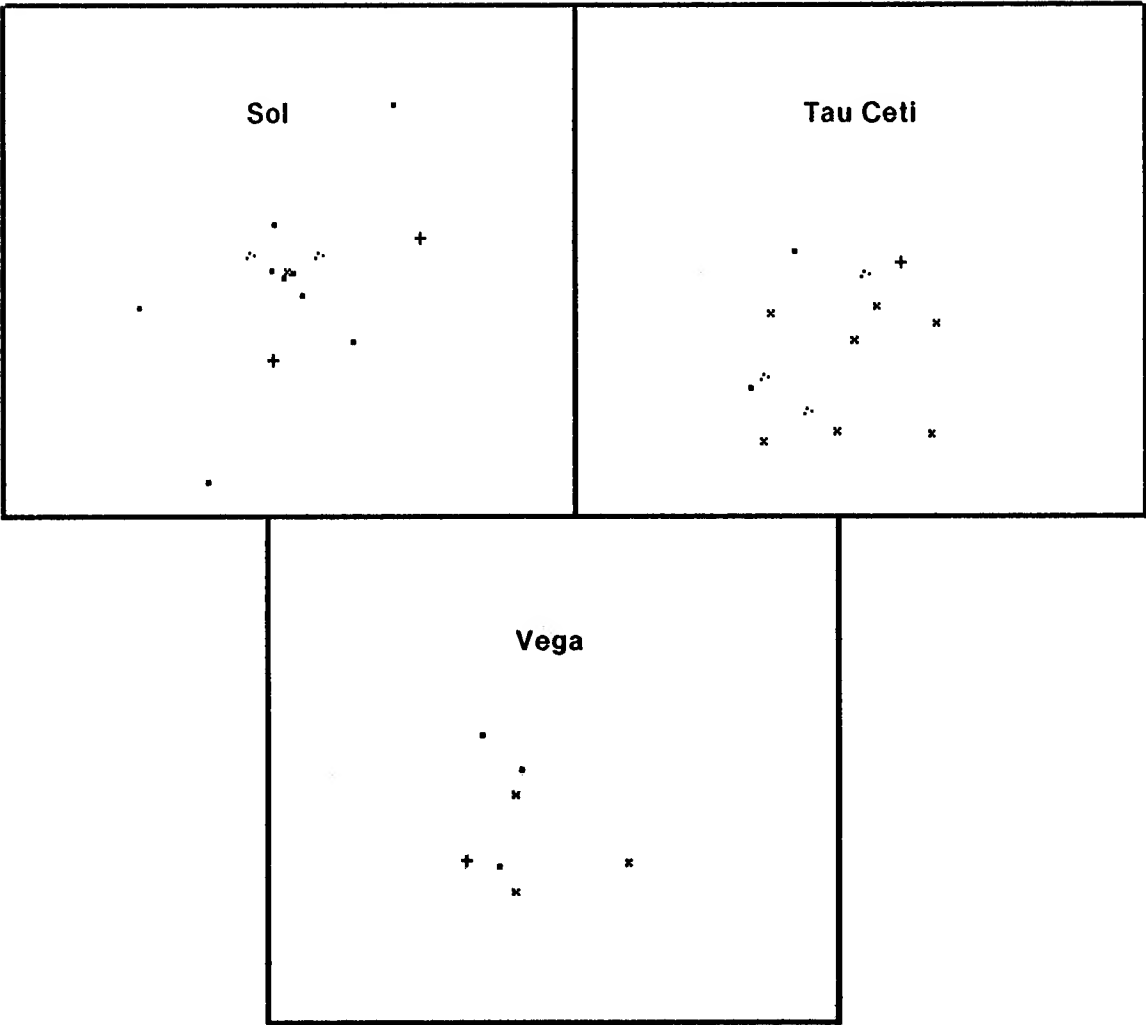


Riga



Sirius





Appendix V: Unsafe Trek Games

If you play a game on the following nets with any of the listed numbers of stellar systems, an Alto on the net will receive packets from the game. This will deteriorate the performance of the Alto and is not recommended. A boldface number indicates that the Alto affected is a gateway.

Net 2: 11
Net 3: 1, 4, 8, 10, 11, 12, **13**, 14
Net 5: **13**
Net 6: 7, 8, **13**
Net 10: 1, 3, 8, 9, 10
Net 14: 2
Net 17: 2, 7, 9

The following nets have no problems:

1, 12, 20, 21, 22, 23, 27, 34, 35, DC, UofR

The following ships sub-systems can be damaged in the following ways:

<u>Sub-system</u>	<u>Damage</u>
Communications:	Cannot send or receive messages.
Control Jets:	Any attempt to turn the ship will send it spinning in the direction of the turn. Trying to turn again will reverse the spin.
Energy System:	Energy will no longer be regenerated. All uses of energy (shields, acceleration, phasers, jumping) will deplete your reserves.
Hyper Drive:	You can no longer do automatic jumps. You can still jump through star gates.
Impulse Drive:	You can no longer accelerate.
Shields:	Shields cannot be raised, although shields presently up will remain up.

In addition, the long range scan, short range scan, galaxy scan, velocity vector, and energy indicator can be damaged. These will be quite obvious since the appropriate indicator will turn gray on the display. The level of gray will vary depending on the severity of the damage.

The phasers and torpedos can also be damaged. When this happens, the indicator 'fire phasers' will change to 'DAMAGED phasers'. You cannot fire until the 'fire phasers' indicator has returned.

Scans

Long Range Scan	-- right bug in Galaxy Scan
Galaxy Scan	-- any bug in Long Range Scan
Remote Long Scan	-- middle bug on star system with a base in Galaxy Scan

Moving and Turning

automatic Jump	-- left bug on star system with a base in Galaxy Scan
manual Jump	-- accelerate to warp speed near a star-gate
change Velocity	-- accelerate
Accelerate	-- left or middle bug in accel bar (Cursor cue: a horizontal bar)
decaying Accelerate	-- right bug in accel bar (Cursor cue: a horizontal bar)
change Direction	-- anybug in direction circle (Cursor cue: a star)

Fighting

point Phasers	-- anybug in direction circle (Cursor cue: an open circle)
fire Phasers	-- any bug in Fire control (Cue: Fire Phasers box inverts)
point Torps	-- change direction of ship
fire Torps	-- any bug in Fire Control (Cue: Fire Torpedos box inverts)
raise Shields	-- left bug in short scan (Cursor cue: bar)
lower Shields	-- right bug in short scan (Cursor cue: bar)

Repairs and Supplies

get more Torps	-- dock with base
get more Bases	-- dock with constructor base
repair Damages	-- wait or dock with base
increase Energy	-- lower screens and wait or dock with a base

Bases

deploy base	-- (ESC) B
Remote Long Scan	-- middle bug on star system with a base in Galaxy Scan
automatic Jump	-- left bug on star system with a base in Galaxy Scan
Destroy base	-- (ESC) D during Remote Long Scan
Docking	-- move slowly toward base

Miscellaneous

Communication	-- type message followed by a return
Quitting	-- (ESC) Q